

REMARKS

In accordance with the foregoing, new claim 15 has been added. Claims 1-14 are pending and under consideration. Claims 5-6 and 12-13 are allowed.

REJECTION UNDER 35 U.S.C. §103:

Claims 1-4 and 7 are rejected under 35 U.S.C. §103(a) as being unpatentable over Miyata (JP 02000350393A) and in further view of Abramowitz et al.

Independent claim 1 recites "a plurality of poles, where at least a part of an outer periphery of one pole of the rotor has a shape of a hyperbolic cosine curve in a cross section perpendicular to a central axis of the rotor."

Applicants previously argued that it would not have been obvious to select a shape of a hyperbolic cosine from among an infinite number of curves. An infinite number of curves is possible because any curve can be expressed by a combination of cosine functions and sine functions.

In response to the Applicants' previous arguments, the Examiner indicates agreement with the Applicants' statement regarding expressing a curve by a combination of cosine functions and sine functions, and uses this premise in support of the rejection. However, the Examiner has taken this statement out of context. This statement is used to establish the unobviousness of selecting a hyperbolic curve from among an infinite number of curves. The Examiner still has not set forth any motivation (set forth in the references) for one of ordinary skill in the art to select a hyperbolic curve, as opposed to any other of a number of curves.

Applicants also previously argued that it would not have obvious to combine Miyata and Abramowitz et al. The Examiner acknowledges that references cannot be arbitrarily combined, but also relies upon In re McLaughlin, 170 USPQ 209 (CCPA 1971) stating that the references do not have to expressly articulate the motivation. In In re McLaughlin, the secondary references describe applicability to the subject matter of the primary reference. Specifically, the primary reference indicates that the car shown therein is suitable for carrying palletized loads, and the secondary references show that it is well known to use side filler panels and bulkheads to confine palletized loads. In re McLaughlin at 212.

Thus, there is a teaching in the secondary references that ties these references to the primary reference. In contrast, the mathematical text to Abramowitz et al. does not indicate any usefulness of the functions therein to the structure of Miyata. Therefore, there would have been

no motivation to combine these references.

The Examiner further relies upon In re Bozek, 163 USPQ 545 (CCPA 1969). This case also involves the combination of related references, and is therefore distinguishable from the instant application. Specifically, the primary and secondary references both relate to containers. In re Bozek at 546.47.

It is further noted that "rejection of patent application for obviousness under 35 USC §103 must be based on evidence comprehended by language of that section, and search for and analysis of prior art includes evidence relevant to finding of whether there is teaching, motivation, or suggestion to select and combine references relied on as evidence of obviousness; factual inquiry whether to combine references must be thorough and searching, based on objective evidence of record." In re Lee 61 USPQ2d 1430 (CAFC 2002)

Thus, as pointed out in In re Lee, the record must support motivation, i.e., there must be something in the record pointing out where the recited motivation can be found. In addition, there must be some discussion on how that purported motivation or suggestion is even relevant to the reference being modified. Such a motivation is lacking in the presently cited references.

Furthermore, it is noted that complex numbers cannot define the rotor contour. Instead, it is necessary to adopt a mathematical function expressing transformation from one-dimensional real numbers to one-dimensional real numbers (with domain on an axis of abscissa and codomain on an axis of ordinate to express two-dimensional curve) in order to define an outer periphery of a rotor. Thus, a mathematical function expressing transformation from complex numbers (each comprising a real number element and an imaginary number element) to complex numbers cannot define the rotor contour.

The Examiner cites equation [4.5.8] of Abramowitz et al.: $\cosh z = \cos iz$ (i : imaginary unit), stating "A combinations of exponential functions with negative powers can be made to fit any contour and replaced easily and erected by a combinations of circular functions..." However, z and $\cosh z$ are complex numbers and the hyperbolic function according to equation [4.5.8] expresses mapping from a complex plane (two-dimension) to the complex plane (two-dimension). The hyperbolic function according to the equation [4.5.8] with complex variables cannot express a rotor contour of the present invention.

Claims 8-11 and 14 are rejected under 35 U.S.C. §103(a) as being unpatentable over Miyata and in further view of Nitta et al. (JP 406217478) and Abramowitz et al.

The comments above also apply here.

CONCLUSION:

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

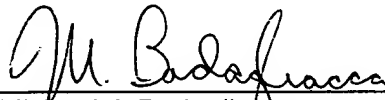
Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Response, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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